



Permit-to-Install/Plan Approval Application

FOR AGENCY USE ONLY		
Date Received: 1/16/12	Application/Revenue ID: 873442	Organization ID: 108104
Document ID: 200314	Place ID:	Check ID: 592725
Check Date: 4/11/12	Check Number: 1002	Check Amount: \$15,300.00

1. Project Name: Ringer Energy, LLC.

2. Applicant (see note after signature)

Name: Ringler Energy, LLC.
 Mailing Address: 7624 Riverview Road
 City: Cleveland State: OH Zip: 44141
 Contact Name: Alex Ringler
 Title: President
 Phone: (740) 272-3628 Fax: () E-mail: alexringler@me.com

3. Application/Plans Prepared by:

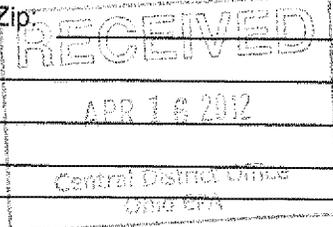
Name: Quasar Energy Group, LLC.
 Mailing Address: 7624 Riverview Road
 City: Cleveland State: OH Zip: 44141
 Contact Name: Bruce Bailey
 Title: Vice President of Technical Affairs
 Phone: (216) 538-1151 Fax: (216) 986-9999 E-mail: bbailey@quasarenergygroup.com

4. Billing Address (if different than Applicant)

Name: _____
 Mailing Address: _____
 City: _____ State: _____ Zip: _____
 Contact Name: _____
 Title: _____
 Phone: () - Fax: () - E-mail: _____

5. Future Owner (if different than Applicant)

Name: _____
 Mailing Address: _____
 City: _____ State: _____ Zip: _____
 Contact Name: _____
 Title: _____
 Phone: () - Fax: () - E-mail: _____



6. Project LocationStreet Address or Location Description: 2881 CR 156, Cardington, Ohio 43315County: Morrow Township: WestfieldMunicipality: Cardington Latitude: 40° 26' 41" N Longitude: 82° 57' 39" WMethod of Determination: Google Earth**7. Brief Project Description:** High solids anaerobic digestion of various organic feedstocks such as food waste, FOG, manure, biosolids (sewage sludge), energy crops, and approved industrial wastes. Produces green energy and value added digested products.**8. Will one or more acres be disturbed during construction of this project?** Yes NoIf Yes, enter the date the NOI for coverage under the construction storm water NPDES permit was submitted: 6/22/11 and the date coverage was granted: _____**9. Will wetlands be disturbed during construction of this project?** Yes NoIf Yes, enter the date the 401/404 permit application was submitted: / /**10 a. Is this application part of a combined permit-to-install application? (for example air + water)** Yes No**b. Has an application for a Class V injection well permit been submitted?** Yes No N/AIf Yes, date submitted: / /**11. Compliance Status****a. Will this project connect to a collection/treatment system that has a NPDES permit?** Yes No

If Yes, list federal and state permit numbers:

OH _____

b. Is this application filed in compliance with findings and orders, a consent decree, and/or NPDES permit schedule? Yes NoIf Yes, effective date of the document containing the schedule: / /**12. Compliance with 208 plan**

Does the project conform to the 208/201 plan for the area?

 Yes No N/A

If Yes, has the engineer submitted supporting documentation?

 Yes No**13. Designated Ohio, Wild, Scenic, & Recreational Rivers**

Is this project located within 1000 feet of a designated wild, scenic, and recreational river?

 Yes NoSee <http://ohiodnr.com/?TabId=985> for additional information**14. Estimated Project Schedule:**Beginning construction date: 6/15/12 Ending construction date: 10/15/12 Beginning operation date: 10/15/12**15. Project Cost:***Installation/Construction Cost: \$ 6,000,000 (Mark one): Actual Bid EstimateAnnual Operation/Maintenance Cost (if applicable - this project only): \$

Are Water Pollution Control Loan Funds going to be used for this project?

 Yes NoIf No, Funding Source: Applicant, State, and Federal Sources

*This is costs of the treatment/dispersal/collection system that will serve the project

16. Attachments

The following are included in this application package (check appropriate box(es) and indicate how many copies of each are provided):

<input checked="" type="checkbox"/> Detail Plans	6	___ Management Plan	
<input checked="" type="checkbox"/> Soil Evaluation Form	1	<input checked="" type="checkbox"/> Engineering Report	1
<input type="checkbox"/> Hydrogeologic Site Investigation Report		<input checked="" type="checkbox"/> Engineering Specifications	2
<input type="checkbox"/> Site Evaluation Form		___ Sewer Authority Letter	
<input type="checkbox"/> Other (describe):		<input checked="" type="checkbox"/> Antidegradation Addendum	2
<input type="checkbox"/> Narrative Plans (LTCP, GP, etc.)			

17. Form B / C Submission (check all that apply)

- Sewer and Pump Station Construction – Form B1
- Onsite Sewage Treatment Systems – Form B2
- Wastewater Treatment Plants Less Than 100,000 GPD – Form B3
- Wastewater Treatment Plants Greater Than or Equal to 100,000 GPD and all Pond Systems – Form B4
- Industrial Direct Discharge Facility – Form B5
- Industrial Indirect Discharge Facility – Form B6
- Underground Storage Tank Remediation – Form B7
- Holding Tanks – Form B8
- Industrial Impoundment Ponds – Form B9
- Land Application Management Plan for Sludge or Waste other than Treated Sewage – Form C1
- Treated Sewage Land Application Management Plan – Form C2
- Sewage Holding Tank Management Plan – Form C3

18. Fee Calculations

Permit-to-Install (maximum total fee \$15,100)

a. Application fee:	\$ 100.00
b. Plan review fee:	\$ 100.00
c. Plan review fee (installation/construction cost x .0065):	\$ 32,500
d. Total Fee (a + b + c):	<u>\$ 15,100</u>

Sludge Management Plan Approval*

a. Application fee:	\$ 100.00
b. Plan review fee:	\$ 100.00
c. Total fee (a + b):	\$ 200.00

* No separate fee is needed for land application

19. Antidegradation

Is this project subject to the Antidegradation Rule (OAC 3745-1-05)? Yes No

If **Yes**, an antidegradation addendum must be submitted (Note: It applies even if an exclusion and/or waiver is met)

If **No**, check all that apply:

- Application with no direct surface water discharge (Projects that do not meet the applicability section of 3745-1-05 (B)1, i.e., onsite sewage treatment systems, sanitary sewer extensions, indirect discharger to POTW, etc.).
- Renewal NPDES application or PTI application with no requested increase in loading of currently permitted pollutants.
- Narrative Plans (Examples: LTCP, Land Application, General Plans, etc.)

20. Submittals:

To be considered complete, this application must include the following unless otherwise directed by Ohio EPA:

- Four copies of the detail plans including profile and plan views of all sewers (shown on the same sheet), existing (as applicable) and proposed pump station facilities, incorporating all of the details outlined in Section 20.1, 20.2 and 20.3 of *Recommended Standards for Wastewater Facilities*.
- Two copies of complete technical specifications.
- Two copies of the Permit-to-Install Application including Form A, pertinent B & C form(s), and the antidegradation addendum (if applicable)
- Fee check payable to "Treasurer, State of Ohio."

21. Signature of the Applicant: (see Ohio Administrative Code 3745-42-03)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision and that all the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are substantial penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Typed name: Alex Ringler Title: President

Signature:  Date: 4/11/2012

NOTE (Who Must Sign):

The person signing as ΔApplicant@ is not the applicant=s engineer or architect or any other person submitting the Permit-to-Install Application on behalf of the owner. The ΔApplicant@ should be owner of the facility, business, corporation, company, etc. or the legal responsibly entity. It is not the engineer who prepared the plans.



Permit-to-Install/Plan Approval Application

Attachment III: Biological Treatment

Note: A separate copy of this form should be used to describe each type of biological treatment proposed.

1. Biological Treatment - General Information		
a. Biological Treatment Type	<input checked="" type="checkbox"/> Secondary	<input type="checkbox"/> Advanced
b. Flow Type	<input checked="" type="checkbox"/> Continuous	<input type="checkbox"/> Batch
	<input checked="" type="checkbox"/> Complete Mix	<input type="checkbox"/> Plug
	New	Existing
c. Process type	Anaerobic Dig.	
d. Number of tanks	1	
e. Surface area dimensions (feet, each)	2,827	
f. Side water depth or height (feet, each)	33	
g. Detention time (hrs & mins @ ADDF)	480 hours min.	
h. Others:		

2. Aeration and/or Mixing: <input type="checkbox"/> N/A		New	Existing
a. Number of blowers			
b. Type (diffused air, mechanical surface, etc.)			
c. Capacity (each)			
d. Oxygen supplied (lb oxygen/lb BOD ₅) (lb oxygen/lb TKN)			
e. MLSS (design)			
f. F/M ratio			
g. Organic loading (lb BOD ₅ /1000 cu ft)			
h. RAS flow (% at ADDF)			
i. WAS flow (% at ADDF)			
j. Others:			

3. Trickling Filters <input type="checkbox"/> N/A		New			Existing		
a. Media type							
b. Media nominal size (in ³)		in x	in x	in	in x	in x	in
c. Media volume (ft ³)							
d. Media surface area (ft ² /ft ³)							
e. Distributor type (rotary, fixed, etc.)							
f. Recirculation rate (MGD @ ADDF)							
g. Others:							

4. Other Biological Treatment <input type="checkbox"/> N/A		<input type="checkbox"/> New	<input checked="" type="checkbox"/> Existing
a. Describe: Anaerobic Digestion.			
b. Design Criteria: Minimum of 38% volatile solids destruction.			



Permit-to-Install/Plan Approval Application

Attachment VII: Sludge Treatment and Disposal

Sludge Thickening, Stabilization, Conditioning, Dewatering, Reduction, Disposal and Storage

1. Sludge Thickening <input checked="" type="checkbox"/> N/A	New	Existing
a. Thickening type		
b. Number of thickeners		
c. Surface area dimensions (feet, each)		
d. Side water depth or height (feet, each)		
e. Detention time (hrs & min, total)		
f. Surface overflow rate (gpd/ft ²)		
g. Solid surface loading		
h. Thickened sludge concentration (%)		
i. Others:		
j. If air flotation is the thickening process:		
i. Air-to-solids ratio		
ii. Air pressure		
iii. Tank operating pressure		
iv. Recycling ratio (%)		
v. Others:		
vi. Will air flotation thickening be aided by polymer addition?		<input type="checkbox"/> Yes <input type="checkbox"/> No
k. If centrifugal thickening is the thickening process:		
i. Centrifuge type		
ii. Number		
iii. Rate		
iv. Others:		
v. Will centrifugal thickening be aided by polymer addition?		<input type="checkbox"/> Yes <input type="checkbox"/> No

2. Sludge Stabilization <input type="checkbox"/> N/A	New	Existing
a. Number of sludge stabilization tanks	1	
b. Surface area dimensions (feet, each)	2,827	
c. Retention time (hrs & min, total)	480 hours min.	
d. Side water depth (feet, each)	33	
e. If aerobic digestion is the stabilization process:		
i. Number of aerators		
ii. Type		
iii. Oxygen supplied (with largest blower out of service)	CFM at PSI lb oxygen/day	CFM at PSI lb oxygen/day
iv. Others:		

2. Sludge Stabilization (cont.)	New	Existing
f. If anaerobic digestion is the stabilization process:		
i. Solids loading (lb vss/cu ft/day)	0.40	
ii. Solid retention time (hours & minutes)	480 hours min.	
Influent Solids Content (% dry basis)	12	
Effluent Solids Content (% dry basis)	7	
iii. Digester cover type	flexible	
iv. Digestion temperature	mesophilic	
v. Sludge heating type	heat exchanger	
vi. Sludge heating rate (BTU/hr)	0.56 MMBTU/HR	
vii. Sludge mixing type	Complete	
viii. Number of withdrawal levels	2 min.	
ix. Sludge withdrawal pipe size	8" to 12"	
x. Gas withdrawal pipe size	6" to 12"	
xi. Others:		

3. Other Sludge Stabilization N/A Yes No

a. Describe: Anaerobic digestion.

b. Design Criteria: Minimum of 38% volatile solids destruction when used for digestion. None when used for storage.

4. Sludge Dewatering N/A Yes No

a. Describe:

b. Design Criteria:

5. Sludge Reduction N/A Yes No

a. Describe: Anaerobic Digestion

b. Design criteria: Minimum of 38% volatile solids destruction when used for digestion. None when used for storage.

6. Sludge Disposal <input type="checkbox"/> N/A	New	Existing
a. Sludge dry solids content (%)	5 to 10	
b. Method of disposal	land appl.	
c. Estimated sludge production (tons of dry solids/year)	6,303	

7. Sludge Storage Tanks <input type="checkbox"/> N/A	New	Existing
a. Location		
b. Number		
c. Surface area dimensions (feet, each)		
d. Storage time (days, total)		
e. Side water depth (feet, each)		
f. Sludge removal method		
g. Will mixing be provided? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If Yes, Mixing type: _____ Describe: _____		
h. Will aeration be employed? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If Yes, Number of blowers: _____ Type: _____ Capacity: _____		
i. Will chemicals be used to control odors? <input type="checkbox"/> Yes <input type="checkbox"/> No		
If Yes, Chemical type: _____ Describe: _____		

8. Sludge Management Plan	
Has plan been approved? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
If Yes, date of approval: <u> // </u>	If No, date to be submitted: <u> 4/11/2012 </u>



Permit-to-Install/Plan Approval Application

Attachment VIII: Ponds

Pond Type (check one - if more than one type is proposed, submit a separate copy of this attachment for each type)

<input type="checkbox"/> Controlled discharge facultative	<input type="checkbox"/> Equalization	<input type="checkbox"/> Flow through facultative	<input type="checkbox"/> Evaporation
<input type="checkbox"/> Aerated	<input type="checkbox"/> Sludge treatment	<input type="checkbox"/> Polishing	<input checked="" type="checkbox"/> Sludge storage

1. Pond Characteristics

Number of ponds ⁽¹⁾: 5 (4 constructed)

2. Pond 2 4	New	Existing
a. Capacity (mgd)		1.0
b. Surface area dimensions (feet)		26400
c. Detention time (hrs & min)		480
d. Side water depth (feet)		2
e. BOD ₅ loading rate (lb/acre/day)		NA
f. Minimum DO maintained (mg/l)		NA

3. Pond 2 5	New	Existing
a. Capacity (mgd)	4	
b. Surface area dimensions (feet)	63000	
c. Detention time (hrs & min)	480	
d. Side water depth (feet)	2	
e. BOD ₅ loading rate (lb/acre/day)	NA	
f. Minimum DO maintained (mg/l)	NA	

4. Pond 3	New	Existing
a. Capacity (mgd)		
b. Surface area dimensions (feet)		
c. Detention time (hrs & min)		
d. Side water depth (feet)		
e. BOD ₅ loading rate (lb/acre/day)		
f. Minimum DO maintained (mg/l)		

(1): If more than three ponds are proposed, repeat page as needed.

5. Distance between bottom of ponds and maximum ground water elevation: 5 feet

6. Distance between bottom of ponds and bedrock formation: >50 feet

7. Is aeration provided to ponds? Yes No
If Yes, please state the aeration method:

8. Dike Construction

a. Soil type: CL b. Compaction density: 10 -7
c. Top width (feet): 5 d. Inner slope: 2:1
e. Outer slope: 3:1 f. Free board (feet): 2
g. Will borrow material be needed for construction? Yes No
h. Will anti-seep collars be used on all pipes that penetrate the dike? Yes No N/A

9. Ground Water Protection

a. Soil type⁽²⁾: CL
b. Compaction density⁽²⁾: 10 -7
c. Liner Type: Synthetic Bentonite Clay Other: _____
d. Liner thickness: 3'
e. Liner coefficient of permeability (cm/s): _____
f. Has a hydrogeological study been prepared for the pond/ponds site? Yes No
g. Has the hydrogeological study been approved by Ohio EPA, Division of Drinking and Ground Waters? Yes No
h. Will monitoring wells be installed around the pond/ponds site? Yes No

10. Erosion Control

Explain what method(s) will be used to control erosion: BMP with vigorous grass cover.

(2): If the liner soil material is the same as the material used for the dike construction, please fill in "Same as above".



Plan Approval - Management Plan For Sludge or Industrial Byproducts other than Treated Sewage

Note: This form, with the attachments indicated, is intended to serve as the main substance of the management plan. If you prefer to submit a separate and complete document to serve as your management plan, then to respond to a question where a description or calculation is requested (such as Items C.1 through C.4), simply enter the page numbers of the submitted plan where the information requested can be found. Please respond on this form when just a check mark or brief statement is requested.

FOR AGENCY USE ONLY	
Application Number:	Date Received: / /

Applicant:	Ringler Energy, LLC.
Facility Owner:	Ringler Energy, LLC.
Application/Plans Prepared by:	Quasar Energy Group, LLC.
Project Name:	Ringler Energy, LLC. - Anaerobic Digestion Facility

A. Background Information

a. Briefly describe type and source of material to be land applied: Class B anaerobically digested liquid, cake and/or centrate.

b. Briefly describe proposed uses of materials (agronomic uses, soil blends, structural fill, etc.): agronomic application for nutrients...

c. Existing Plan Approval number: _____ N/A

B. Generating Facility N/A

a. Amount of sludge/byproduct generated	6,500	dry tons/year
b. Amount proposed for beneficial use	6,500	dry tons/year
c. Disposal method for amount not used	land appli	
d. Storage capacity at facility:	120	days

C. Land Application (If N/A, Skip to D) N/A

a. Use category of land application area (check all that apply): Unrestricted Access site Restricted Access site

b. Quantity of material to be land applied:
 3 Inches/acre/year (annual average-liquid) up to agronomic Dry tons/acre/year (annual average-sludge)

c. Does the land application area have subsurface drains/tiles located less than 24 inches below natural grade?
 Yes No Unknown at this time

d. Amount of land area available for land application if known (do not include buffer zones in the figure) 1,000 acres

e. Maximum slope of land to be used for land application = 15 %

f. Type(s) of crops or vegetation to be grown on land application area: agronomic

C.1 Describe the method or methods used for the storage and land application of sludge/other byproducts (including detailed information about the distribution system):

This facility has 120 days storage for liquid sludge in existing and planned lagoons.

C.2 State what the maximum land application rate(s) are proposed to be and the total acres required and available for land application. Attach calculations and references showing how the application rates and acreage needs were determined.

Up to required dry tons/acre based on agronomic requirements of crop.

C.3 Describe the monitoring of the material to be land applied and the soils in the land application area(s), including frequency, methods and parameters that will be measured in each:

As required per NPDES permit.

C.4 Describe the appropriate weather conditions required for the land application of sludge/other byproducts and how they will be determined and documented:

Regional weather stations will be consulted for current and projected conditions.

C.5 Check which land application activities listed below are proposed. If yes, please explain how runoff, ponding or discharges to waters of the state will be prevented (attach separate pages as needed).

- | | | |
|---|------------------------------|--|
| Do you propose to land apply during precipitation events?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to spray irrigate when instantaneous wind speeds exceed 20 miles per hour?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to land apply within 10-year floodplain?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to land apply in wetlands?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to land apply where the land application contract is expired or void?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to land apply when the ground is saturated at or near the surface?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| Do you propose to land apply where there is at less than 12 inches between final grade and bedrock, sand or gravel lenses, compacted glacial till, and/or normal ground water elevation?
If yes , please explain: | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

C.6 List setback distances that will be observed for all of the following:

Ditches/Streams/Waterways:	<u>33</u> feet	Private Water Supply Well:	<u>300</u> feet
Residences/Business:	<u>300</u> feet	Public Water Supply Well:	<u>1,000</u> feet
Sinkholes:	<u>300</u> feet	Public Surface Drinking Water Intake:	<u>1,000</u> feet
Pond or Lake:	<u>33</u> feet	Other: <u>Medical Care Facility</u>	<u>1,000</u> feet

Attach additional pages if different setbacks are proposed for different methods of application (e.g. greater setbacks should be observed for surface application than injection).

C.7 Land application on frozen/snow-covered ground is not recommended. If land application on frozen/snow-covered ground is proposed, please indicate which of the following practices will be used to minimize pollutant discharges or nuisances:

- Application rate is limited to 10 wet tons/acre for solid materials (50% moisture or more) and 5 wet tons/acre for material less than 50% moisture. For liquids the application rate is limited to 5,000 gallons/acre.
- Applications will be made on land with at least 90% surface residue cover.
- Material shall not be land applied on more than 20 contiguous acres, separated by breaks of at least 200 feet.
- Application setbacks shall be increased to at least 200 feet from all grassed waterways, drainage ditches, streams, surface inlets, and water bodies.
- The rate of application will not exceed: _____ lbs Nitrogen/acre or _____ lbs Phosphorus/acre
- Application will not take place on slopes greater than 6% unless material is applied in alternating strips less than 200' wide generally on the contour, or in the case of contour strips, on alternating strips.

If any of these practices are not proposed to be followed, please attach a description of how pollutant discharges will be minimized during application on frozen/snow covered ground.

C.8 Describe or list any other practices that will be used to minimize pollutant discharges or nuisances:

Land application activities will occur during seasonal windows for application. Care will be taken to time material and equipment movement and application to be least disruptive of neighbors. Land application activities will be closely monitored and steps taken immediately to clean-up any spills, breaks in lines, etc.

C.9 Land Application Records

How will land application information be recorded? :

- Ohio EPA's Land Application Record Form Our Own Land Application Record Form (attached)

Where will the records be kept? : corporate office in Cleveland.

C.10 Application Site Map (If known)

a. A map locating each land application site shall be attached. Each site shall be labeled "Restricted access site" or "Unrestricted access site". The map(s) should show the following items and are considered part of this plan:

- All present and known proposed occupied buildings within 300 feet of the land application area.
- All present and known proposed non occupied buildings within 300 feet of the land application area.
- All present and known proposed public and private water supply wells within 1,000 feet of the land application area.
- All sinkholes and waters of the state (including ditches, grass waterways, streams and rivers) within 200 feet of the land application area.
- All public surface drinking water supply intakes within 1500' of the land application area.
- All present and known proposed developments and public access areas within 300 feet of the land application area.

b. If the land application site(s) are not known, will site maps be submitted before land application starts? Yes No

D. Other Beneficial Uses

1. Is this material one of the following:
- Spent Foundry Sand
 - Bottom Ash From Coal Combustion
 - Fly Ash
 - Steel Slag
 - Sludge
 - Other:
2. If the material is "Other", have you contacted Ohio EPA to discuss the applicable regulations? Yes No
3. Is a comprehensive management plan attached for uses other than land application? Yes No

E. Miscellaneous Information:

The following items shall be included with this land application management plan:

- Two copies of the Permit-to-Install/Plan Approval Application Form A or the NPDES Permit Application.
- If applicable, two copies of the site and soil evaluation(s) (For renewal applications, this is only needed if additional or different areas)
- One copy of the sampling results for the material to be beneficially used (the most recent, but no older than one year).
- Four copies of this management plan and any attachments or Four copies of a separate/complete management plan.
- Fee check payable to "Treasurer, State of Ohio."

The following additional information is included with this form:

F. The foregoing data is a true statement of facts pertaining to this proposed management plan.

Printed (Person Preparing Plan):

Bruce Bailey

Title: Vice President of Technical Affairs

Signed:

Bruce Bailey

Date: 5 / 16 / 2012



**RINGLER ENERGY, LLC.
ANAEROBIC DIDECTION FACILITY
SLUDGE MANAGEMENT PLAN
JUNE 2012**

I. GENERAL INFORMATION

A. NAME, ADDRESS, AND PHONE NUMBER

1. Ringler Energy, LLC
7624 Riverview Road
Cleveland, Ohio 44141
Bruce Bailey
Project Manager
216.986.9999 ext. 116

II. SOLIDS INFORMATION

This anaerobic digestion facility (ADF) is a merchant facility and will accept and process biosolids (sewage sludge), manure, foodwastes, FOG (fats, oil, & grease), energy crops, i.e., corn silage, and other organic feedstocks.

A. MANURE

A number of farms and/or livestock based events in the regional produce manures which may be directed to this facility. Due to the organic basis of manure it will contain volatile solids and anaerobic digestion will convert the volatile solids to biogas while stabilizing the manure.

B. FOODWASTE

Food processors in the region produce foodwastes which may be directed to this facility. Foodwaste will be accepted in liquid, semi-solids, and solid forms. Due to the organic basis of foodwaste it will contain volatile solids and anaerobic digestion will convert the volatile solids to biogas while stabilizing the foodwaste.

C. FOG

FOG represents a particular challenge to collection system operators in municipalities. As such a number have restricted acceptance of FOG. This facility will accept FOG because it produces a large volume of biogas when anaerobically digested and is difficult to dispose of through other methods.

D. ENERGY CROPS

Energy crops are grown for anaerobic digestion to produce biogas as a standard practice Europe. We anticipate that such a practice will occur within the expected lifetime of this ADF. Production of Energy Crops with a return of the digested product to farm fields forms a closed loop for beneficial use and the production of renewable green energy. Also included in this category is off-spec or damaged agricultural products such as grain, hay, silage, spilled/soiled feed, stover, etc.

E. GLYCERIN, STILLAGE, & OTHER BIOGAS PRODUCING BY-PRODUCTS

Bio-Based fuels are quickly gaining a foothold in the US. In the case of biodiesel glycerin is a by-product. There is a market for a certain volume of this by-product in the cosmetics industry. As more and more biodiesel is produced a market glut occurs. In the western US it is already standard practice to add glycerin to boost biogas production. Glycerin is an excellent source of biogas when anaerobically digested.

Ethanol is the distillation of alcohol from grain. In the US ethanol is primarily produced from corn (*Zea mays*). Alcohol is produced from the starchy endocarp and the remaining distillers' grain (known as stillage) is usually dried to become DDGS (Distillers' Dried Grain with Solubles). As with glycerin, there is a finite market for DDGS. Stillage, the wet, as produced, form of ethanol by-products is an excellent source of biogas when anaerobically digested.

Organic, high energy materials such as glycerin and stillage will be accepted for anaerobic digestion at this facility.

F. OEPA APPROVED INDUSTRIAL WASTES

Biogas generating industrial waste sources will be submitted to OEPA/DSW for source specific approvals. We are accepting such source specific industrial wastes at our other digester facilities.

I. SOLIDS MANAGEMENT

I. TANKAGE

The initial facility consists of a 750,000 gallon complete mix anaerobic digester and a 230,000 gallon feedstock receiving tank. Based on the designed inflow of up to 6,303 DT/year this volume of digester tankage will result in a 20 to 30 day hydraulic retention time. The 230,000 gallon mixing/contact basin (feedstock receiving tank) for homogenization of cake sludge to an acceptable percent solid for introduction into the digesters.

2. PSRP

The digested biosolids for direct land application purposes will meet PSRP Class B VAR through anaerobic digestion with a minimum volatile solids reduction of 38%.

3. CLASSIFICATION OF SOLIDS

The liquid biosolids that are generated are Class B anaerobically digested.

If for any reason any one of these parameters is not met in the ADS process the effected material will be recycled back through the process until such material meets all the Class B requirements. If the material still fails to obtain the requirements it will be considered for disposal in the landfill.

III. TREATMENT ALTERNATIVES

A. ANAEROBIC DIGESTION

The anaerobic digestion process at this facility will be a high solids digestion process that will have an annual capacity of 6,303 dry tons. A combination of solids cake and liquid sludge producing feed solids of approximately 10 to 15% will be fed into the primary digester, a complete mix digester. The solids will be gently mixed for a retention time of approximately 10 to 12 days. After exiting the primary digester, the solids will be transferred to the dual purpose tanks. Here the solids will remain up to 14 additional days prior to being discharged into a holding tank. While in the digester, the solids will be held at a temperature between 95°F and 98°F and gently mixed with a set of mixers and/or pumps. This will meet Class B PSRP requirements for land application. With the breakdown of the volatile solids during the process, raw biogas will be produced that will be used to generate biogas (equivalent to natural gas) and/or electricity.

1. Capacity – The digester will have dimensions of 60' in diameter with a depth of 33' for a 750,000 gallon working capacity. One additional tank with a working capacity of 230,000 gallons is in the process. This tank will be a 230,000 gallon feedstock equalization tank to assure acceptable % solids and to initiate digestion.

2. Detention time – The detention time for the digesters will be up to 30 days.

3. Pathogen reduction – For Class B for land application, pathogen control (PSRP) will be achieved by anaerobic digestion.

4. Vector Attraction Reduction – Vector attraction reduction (VAR) requirements will be met using Option 1, whereby the mass of volatile solids in the solids shall be reduced by a minimum of 38 %. The loss in solids divided by the volatile solids going into the digester will result in the volatile solids reduction.

5. Type of Cover – The main digester tanks will have flexible covers.

6. Digester mixing mechanisms – Two mixing systems which employ either side wall mounted units or a top stirrer unit will be used.

7. Digester heating mechanisms – Boilers and/or heat exchangers (pulling waste heat from the generator) will be used to heat the digester.

8. Time and temperature record keeping – The anaerobic digestion process will have a process control system integrated into its technology.

C. OFF-SITE LOCATION

The ADS has the ability to divert the liquid effluent from the anaerobic digestion process and place the solids in trucks or water tight containers to be further processed elsewhere.

IV. AGRONOMIC MANAGEMENT FOR BIOSOLIDS

A. STORAGE

Biosolids that are discharged from the ADS and dewatered are placed into storage until the following parameters are met:

1. Laboratory analyses- Analysis work is performed on the biosolids for:
 - a) Pollutant (metals) levels as defined in attachment A
 - b) PCBs (<1 ppm)
 - c) Fecal coliform ($\leq 2,000,000$ MPN /gram fecal coliform).
 - d) At a minimum, volatile solids will be reduced by 38%

2. Storage of biosolids will occur at the ADS within tankage and earthen lagoons.

Annual production of biosolids will be approximately 33,000,000 gallons at start-up or some combination thereof, and the site capacity is as follows:

1. Covered storage area – None.
2. Open storage area – None – biosolids will be shipped as generated.
3. On-Site Lagoon Storage – Concrete and/or earthen lined lagoons will be utilized for storage on a seasonal basis. The lagoons will be isolated from surface and ground water and will be cleaned out annually.

B. MARKETING COUNTIES

The prime counties to be targeted for marketing the biosolids are: the OEPA Northeast and Central District counties. Land application of Class B materials will also occur primarily in the above counties, but may also occur in the rest of the state.

C. DISTRIBUTION

The biosolids will be distributed in bulk for land application on OEPA approved fields.

V. MONITORING AND REPORTING

A. MONITORING

The frequency of monitoring for pollutants, pathogen reduction and vector attraction reduction will be as follows:

Anaerobic digestion – The monitoring for the pollutants and bacterial counts will be monthly. The vector attraction reduction requirement will be monitored per permit requirements for volatile solids.

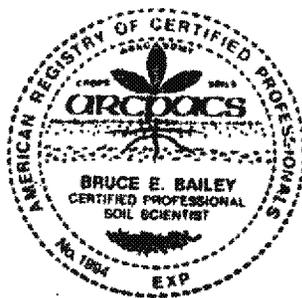
The frequency of monitoring for total Kjeldahl nitrogen or equivalent, ammonia nitrogen, phosphorus, potassium and pH will be monthly for both the anaerobic digestion processes.

The frequency of monitoring for the % dry solids, % volatile solids and the weight in dry tons shall be done monthly for the anaerobic digestion processes.

B. REPORTING

Annual reports will be generated and be available for five years and shall contain the following information:

1. Pollutant concentrations for all processes.
2. Description of how pathogen reduction requirements were met including the bacterial counts for all processes.
3. Description of how vector attraction reduction requirements were met for all processes.
4. Results for pathogen reduction, vector attraction reduction, total Kjeldahl nitrogen, ammonia nitrogen, phosphorus, potassium, pH, % dry solids, % volatile solids, and weight in dry tons processed. P and K data will be provided to farmers as P_2O_5 and K_2O , which are the fertilizer equivalents that farmers are accustomed to working with.
5. Signed certification statement for pathogen and vector attraction reduction compliance.



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